

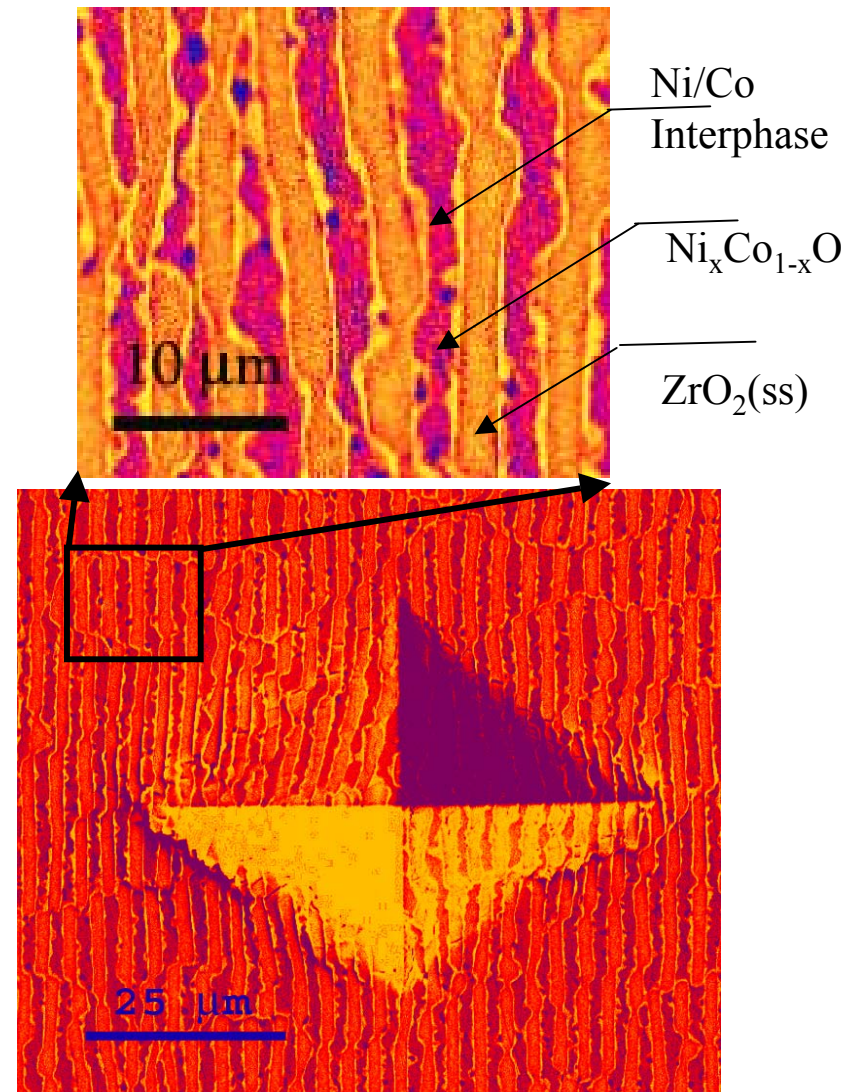
# Nanomechanics of Microcomposite Interfaces

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Interfaces play a dominant role in deformation and fracture of structural materials. To achieve desirable properties in such systems, further modification of interfaces is essential to enhance their mechanical properties.

The figures show a novel approach to create “ductile” interphases in brittle oxide microcomposites via selective reduction only at interfaces.

The broad objective of our research is to understand the influence of interfacial parameters (structure, chemistry, bonding) to nanoscale deformation and fracture.



Crack arrest in the reduced  $\text{Co}_{1-x}\text{Ni}_x\text{O}/\text{ZrO}_2$  DSEs ( $x=0.5$ ) due to formation of Ni/Co interphase phase (see inset).